

# THE MOST TROUBLE

ancient and learned playe, called the Philo-  
sophers game, intended for the recreation  
of students, and other sober persons, im-  
passing the tediousnes of tyme, to the releas of  
their labours, and the exercise of  
their wittes.

Set forth with such playne preceps, rules, and ta-  
bles, that all men with easie may understande  
it, and most men with pleasure practise it.

by Rafe Leuer and Augmen:

Ed by W. P.



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to be sold at his shop under Bowchurch  
in chepe syde.

The Lord Robert Duddelyc.

Vulnere virescit Virtus.



The Physiognomie here figured, appeares by Painters Arte:  
But valyant are the vertues that possesse the inward parte.  
Whych in no wise may paynted be, yet playnely do appear.  
& shine abrod in euery place with beames most bright & cleare.

TO THE RYGH T HO-  
norabla, the Lord Robert Dudley, Mai-  
ster of the Queenes Maiesties horse,  
Knight of the most honorable order  
of the Garter, and one of the Queenes  
maiesties priuie Counsell, I A M 155

ROVBOTHVM heartelye

wisherh longelise, with  
encrease of godly ho-  
nour and eternall  
felicitie.

  
Ith that your honour is  
(full beng  
(right honorabile lord)  
To vvisdō & to godlines  
vwith true faithful accord

Sith that in deed you do delyte,  
in learning and in skyll:  
The shovv vherof doth vycell expresse  
a perfect godly vyll.

Sith that also you haue in hand,  
affayres of force and vraight:  
And study do both day and night,  
to set all thinges full straight.

a.ij.      I thought

## THE EPISTLE

I thought therfore your honour shoulde  
not lacke some godly game:

VVhereby you might at vacant times  
your self to pastyme frame.

VVhereby I say you might release,  
such trauailes from your mynde:

And in the meane vwhile honest mirth  
and prudent pastyme fynde.

Remembering then this auncient play,  
vvhile vvisdome doth abound:

Called the Philosophers game,  
me thinkth I haue one found.

VVhich may your honour recreate,  
to read and exercise:

And vwhich to you I here submit,  
in rude and homly vwise.

Pithagoras did first inuent,  
this play as it is thought:

And therby after studies great,  
his recreation sought.

Yea

## DEDICATORY.

Yea therby he vvoid vwell refreshe,  
his studious vvery braine:  
And still in knovvledge further vvade  
and plye it to his gaine.

Accompting that a vvicked play,  
vwherin a man leudely:

Mispendes his tyme & vvit also,  
and no good getts thereby.

But greuously offendes the Lord,  
and so in steed of rest:

VVith trouble and vexation great,  
on euery side is prest.

Most games and playes abused are,  
and fevve do novv remaine:

In good and godly order as,  
they ought to be certaine.

For vvhyl all games shoulde recreat,  
the heuy mynde of man:

And eke the body ouerlayde:  
vvith cares and troubles than.

a.ij.

But

## THE EPISTLE

But nowv in stead of pleasant mirth,  
great passions do arise:

In stead of recreation nowv,  
reuengings vve practise.

In stead of loue and amitie,  
long discords do appeare:

In stead of trueth and quietnes,  
great othes and lyes vve heare.

In stead of frendship, falshode nowv,  
mixed vvith cruell hate:

VVe finde to be in playes & games,  
vwhich dayly cause debate.

Pithagoras therfore I saye,  
to make redresse herein:

Inuented first this godly game,  
therby to flye from sinne.

Since vwhich time it continued hath,  
in Frenche & Latin eke:

Still exercisde vvith learned men,  
their comforts so to seeke.

VVherby

## DEDICATORY.

VVherby vwithout a further profe,  
all men may be right sure:  
That this game vnto grauitie,  
and vvisdome doth allure.

Els vvould not that Philosopher,  
Pithagoras so vvyse:  
Haue laboured vwith diligence,  
this pastime to deuyse.

Els vvould not so vyell learned men,  
haue amplified the same:  
From tyme to tyme vwith trauell great,  
to bring it into fame.

But let vs never now proceed,  
and come vve to the effect:  
And then shall vve assuredly,  
this pastime not neglect.

For it vwith pleasure doth assvage,  
the heauy troubled hart:  
And vwith lyke comforts driues avvay,  
all kynde of sourging smart.

a.ijij.      The

## THE EPISTLE

The mynde it maketh circumspect,  
and heedfull for to bee:

The tyme that theron is bestovvd,  
is not in vaine trulye.

The body it doth styrre and moue,  
to lightsomnes and ioye:

The fences and the povvers all,  
it no vvyse doth annoye.

It practiseth Arithmeticke,  
and vse of number shovyth:

As he that is conning therein,  
assuredly vwell knowvth,

In Geometricie it truly vvades,  
and therein hath to do:

A learned play it is doutiesse,  
none can say nay thereto.

Proportion also musicall,  
it ioynes vwith thother tyyayne:

So that therin three noble artes,  
are exercisde certayne.

VVhat

## DEDICATORY.

VVhat game therfore lyke vnto this,  
may gotten be or had?

There is not one that I do knovv,  
the rest are all to bad.

It causeth no contention this,  
nor no debate at all,  
By this no hatred vvrath norguyle,  
in any vvisc doth fall.

It stirreth not such troubles that,  
our frend becomes our foe:  
It moueth not to mischiefe this,  
as many others do.

Let vs auoyde the vvorst therfore,  
and cleue vve to the best.  
So shall vve shunne all vvickednes,  
and purchase quiet rest.

So shall vve serue the liuing Lorde,  
and vwalke after his vwill:  
So shall vve do the thing is good,  
and flye that vwhich is yll.

a.v.

Se

## THE EPISTLE

So shall vve liue right christianlyke,  
and do our duties vwell:

So shall vve please both god & prince,  
none shall vs need compell.

And then the Lord of his mercie,  
vvill prosper vs alwayes:

And graunt vs here to haue on earth,  
full many godly dayes.

Yea then the Lord of his goodnes,  
and grace celestiall:

VVill guyde and gouerne our affaires,  
and blesse our doings all.

VVhich Lord graunt to your honour  
good dayes & long to haue: (here,  
vvith much encrease of helth & vvelth  
and from all hurt you saue.

Your honours most humble,  
James Roubottom.

# To the Reader.

**I**Dout not but soone  
man of seuerē iudge-  
ment so soone as he  
hath ons read þ ti-  
tle of this boke wyl  
immediately say, that I had more  
need to exhort men to worke,  
then to teach thē to play, wchich  
censure if it procede not of such a  
froward morositie that can be  
content with nothing but that  
he doth himself, I do not only  
well admit, but also willingly  
submit my self thereto. And if I  
could be persuaded that men at  
mine exhortation wold be more  
diligent to labour, I would not  
only write a treatise twise as long  
as this, but also thynke my  
whole tyme wel bestowed, yf I  
did

To the Reader.

did nothing els , but invent,  
speake , and write that which  
migh特 exhort, moue, & persuade  
them to the furtherance of the  
same . But if after honest labouer  
and trauell recreatiō be requisit,  
(and that nedē no further pro-  
bation because we fauour the  
cause wel inough) I had rather  
teach men so to play , as boþ  
honestye may be reserved , their  
wittes exercised , they them sel-  
ves refreshed , and some profit  
also attayned , then for lacke of  
exercise to see them either passe  
the tyme in idlenes , or els to  
haue pleasure in thyngs fruitles  
and vncouinely . And if great  
Emperours and mighty Mo-  
narches of the world haue not  
bene ashamed by wryting boo-  
kes to teache the art of Dyng  
play

## To the Reader.

playing, of all good men abhorred, and by all good lawes condemned : haue I not some colour of defence , to teache the game, which so wyse men haue inuented , so learned men frequented, and no good man hath euer condemned? The inuention is ascribed to Pythagoras, it beareth the name of Philosophers, prudēt men do practise it & godly men do praise it. But because many herein(as in a play) haue challenged much authoritie, they haue filled this game with much diversitie. In which as I could perceiue the most differens of playing to consist in thre kindes , so haue I playnly and briefly set forth in Englishe not as though there might not more diversities be espied , but that

To the Reader.

that I thought these to them  
whom I haue written to be suffi-  
cient, yet for that I woulde be  
loth, frō playe & game, to fall to  
earnest contention, if any man  
in this doing or any part therof  
shall think I haue done amisse,  
and will do better himself, so  
far am I from envying his  
good proceeding, that I  
wil be right glad, and  
geue him heartye  
thankes there-  
fore.

All things belonging to this game  
for reason you may bye:  
At the booke shop vnder Bochurche,  
in Chepesyde redilye.

# The booke's ver- dicte.

VWanting I haue bene long truly,  
In english language many a day:  
Lo yet at last now here am I,  
Your labours great for to delay,  
And pleasant pastime you to shovve,  
Mynding your vvis to moue I trouve.

For though to mirth I do prouoke,  
Vnto VVisdome yet moue I moree  
Laying on them a pleasant yoke,  
VVisdom I meane, vwhich is the dore,  
Of all good things and commendablee  
Dout this I thinke no man is a ble:

## C A T O.

Interpone tuis interdum gaudia curis:  
Vt possis animo quemuis sufferre laborem;

The people are  
free.

Wanted people to  
work at various  
jobs in  
various  
parts of  
the  
country.

# The diffinition

**T**hat moste ancient and learned playe, called the philosophers game, beinge in Greekes termed *ευδημοναχια*, is as much to saye in English, as the battell of numbers. Numbers be either evne or odd, wherefore the evnen partie is againt the odde; either partie havinge a byng, whiche being taken of the aduersaries part, and a triumphe celebrateth within his campe, the game is ended.

## Of diuerse kyndes of playinge.

**A**monge the diuerse kyndes of playinge thys game, we shall sette forth three sortes, of whiche the reader maye chose whether of them he lyketh best. And of all those three, we shall

A. J.

gynnes

## The Philosophers game.

gyue suche shorte and easye rules, that no man ( althoughe he were altogether ignorant in Arithmetike ) shall fynde the game so hard, but that he may learne to playe it.

## ¶ Of the partes of thyg Game.

**H**E that wylle learne thyg game, shal of the thre waies, muste firste be enstruced of these sixe partes. 1. the table as the fiede . 2. the menne and the numbers of them as the hoste . 3. the playng of them, as the encampinge . 4. the order of playe and remouyng the men, as the marchyng and fightring . 5. the maner and lawes of conquerynge and taking . 6. and last of al the triomph after the victorie,

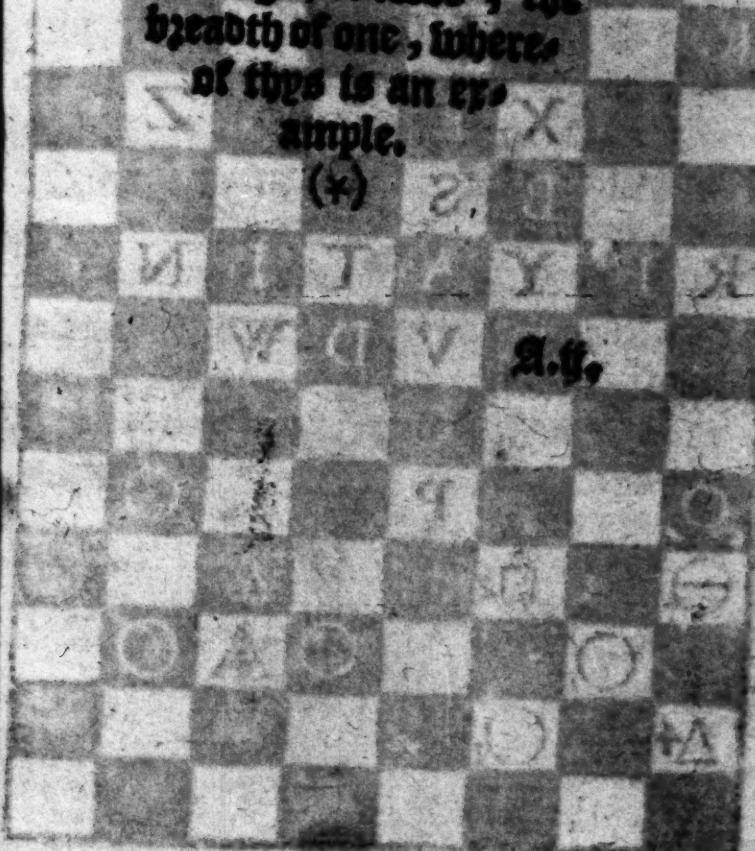
## ¶ Of these partes in the fyfth kynd of playng.

**C**h

# The Philosophers game.

The table muste be a playne bord  
conteynyng . 128 . squares that is . 8 .  
in breadth and . 16 . in length sett fro the  
in two dyuersc colourcs .   
To say a platc  
her understandyng , the table is a  
doble chesse bord , as it were two  
chessebordcs lyncd together ,  
the length of thoo , the  
breadth of one , where  
of this is an ex-  
ample .

(\*)



# The Philosopher's game.



# The Philosophers game.

## ¶ Of the men.

The men be in number. 48. number.  
of. 24. be of one side & must be knowen  
wen by one colour, and. 24. on the  
other syde, whiche also must be marked  
with a contrarie colour, as whitte and  
Blacke, Blew and Rewe, or what cou-  
lours els you lyke best. But in the rule  
ring these. 3. thinges must be obserued,  
þe bottome or lower part of every man  
(excepte the two Kinges) must be mar-  
ked wþþ þys aduersaries colour, that  
when he is taken, he maye change þys  
coate and serue hym vnto whom he is  
prisoner.

The seconde thinge considered in the  
men, is their fasshion: for of eyther syde.  
8. are rounds, other. 8. are triangles 5. 7.  
(the King making. 8) are squares. Therre  
fasshion is such roundes triangles squares



The kynges because they comune of all  
those sortes, as it is knownen by the least  
speculation of the numbers, haue

A syg. the

## The Philosophers game.

the faylis of all thyre kinds, his foundations are two squares, on which are sette, two triangles & vpp them roundes. But this difference is betwene the kinges, the king of the even numbers, hath a pointed toppe, the king of the odde numbers is not pointed, the cause dependeth vpon the considerac[i]on of there numbers by whiche they arise into pyramidall fashion. The third thing considered in the tareyn, is the number that must be written or graue vpon them which to lærne plainlye for practise marke these short rules.

There be of eche kynde of men, two ranke[s] or orders.

The first ranke or order of roundes be 6  
digites even & odde namely of the even,  
2.4.6.8. of the odde 3.5.7.9.

The second order of roundes are found by  
multiplyinge these digites by theselues  
as. 2. times 2. is. 4. 3. times 3. is. 9. Of the  
even they be . 4. 16. 36. 64. . of the oddes  
they be. 9. 25. 49. 81.

The first order of the triangles are found  
by addyng two of the roundes together

## The Philosophers game.

one of the firste order and another of the seconde order , as .2. and .4. make sixe  
3.and.9.make twelve , on the even syde  
they are these .6.20.42.72. on the odd  
syde.12.30.56.90.

The second order of triangles be made  
by addyng one to every one of the first  
order of roundes, and then multiplying  
that number in hym selfe; as .2. is one of  
the firste order of roundes, thereto adde  
one, y is .3. then .3. tymes .3. is .9. a triangle  
of the seconde order , on the even syde.  
Likewise to thre a rold on the odd syde,  
adde .1. so is it .4. then .4. tymes .4. is .16.  
On the even parte , they be .9.25.49.81.  
on the odd parte .16.36.64.100.

The first order of squares ( in whiche  
are contained the kynges ) be made by  
addyng two triangles together, one of  
the syngle order , and another of the se-  
conde, as .5. and .9. make .15. likewise  
12. and .16. make .28. Amonge the even  
they be .15. 45. and .91. the kynges.  
153. amonge the odde they be .28. 66.  
120. and .90. the kynges.

A. 169.

The

## The philosopher's game.

The last order of squares be found, by  
doubling of every one of þ furthe order of  
roundes, and after adding one, last of all  
by multiplying that number in it self, an  
twise. 2. is. 4. and. i. added is. 5. so. 5. times  
5. is. 25. likewise 5. times 5. is. 25. and againis  
7. then 7. times 7. is. 49. These be on  
the even syde. 25. 81. 169. 289. And of the  
odde syde. 49. 121. 225. 361.

These numbers must be sette bypon  
the men both on the upper syde, & also on  
the nether syde. Except one of þ kinges,  
which must with the whole number of  
their pyramis, be marked, onely on the  
bottome. Because the sydes muste haue  
other numbers, namely the highest point  
of the even lyng, must haue. i. þ rounde  
next vnder him marke with. 4. the lower  
most triangle w. 9. the nethermost w. 16.  
The upper most square muste haue. 25.  
The nethermost square shall haue. 36.  
The king of the odde vpon his heade, whi  
ch is a rotunde, not pointed hath. 15, bypon  
on his first triangle. 25. on the second tri  
angle. 36. bypon the syde square. 49.  
upon

## The Philosophers game. vpon the lowest square. 54.

Finally it shalbe good for the auoy-  
dance of confusion, to drawe a line vnder  
every number. Ellis may you take one  
for another, as  $\odot$  the even rounde &  $\odot$  the  
odde rounde, may be taken one for ano-  
ther with oute this lyne or some suche  
marks, lykewise  $\triangle$  and  $\triangle$  Tryangles  
bothe of one syde. And this is suffici-  
ent for the men, the fasshion, colours and  
numbers.

## C The reason of these num- bers and the knowledge of their proportion.

**I**n them that seke the speculati-  
on of these numbers, rather then  
the practise for playing, and haue  
some sight in the sciens of Arithmetike,  
some thyng must be sayde of proportion.  
For this purpose there be three kyndes  
of proportion. Multiplex, superparticu-  
ler and superpartiens.

M.v.

DE

# The Philosophers game.

## ¶ Of multiplet.

MULTIPLEX proportion, is when a great number conteyneth a lesse number manye tymes, and leaveth nothinge, as . 8. conteyneth. 2 sower tymes and nothing remaneth. i.e. conteineth. 4. &c, this proportion semeth best to agree with roundes because the one number conteyneth the other and nothyng remaineeth as the sytle order of roundes be.



# The philosopher's game.

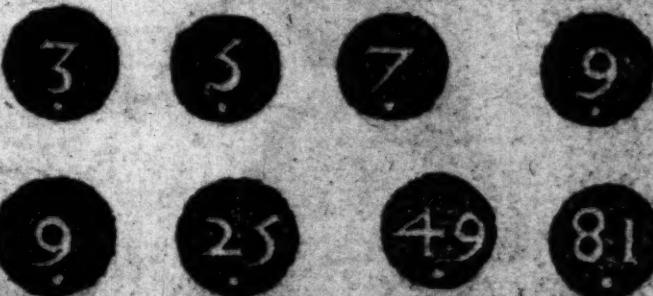
## The second order before.

double. quadruple. sextuple. octuple.



pro-  
por-  
tion,

triple. pl. septupl. nonupl.



## The philosopher's game.

### 31. Of superparticular proportion.

**S**uper particular proportion is when a greater number contayneth a lesser with one part of it, which may measure the whole, as. 12. contayneth. 9. and 3. whiche is a thryde parte of nine. 5. contayneth. 4. and. 2. that is one halfe to 4. Thys proportion beinge the cheise, next unto multiplex, is beste figured by a triangular forme, whypche hathe setmest lynes and angles next unto a circle. For the manner of thys proportion consider thys figure.



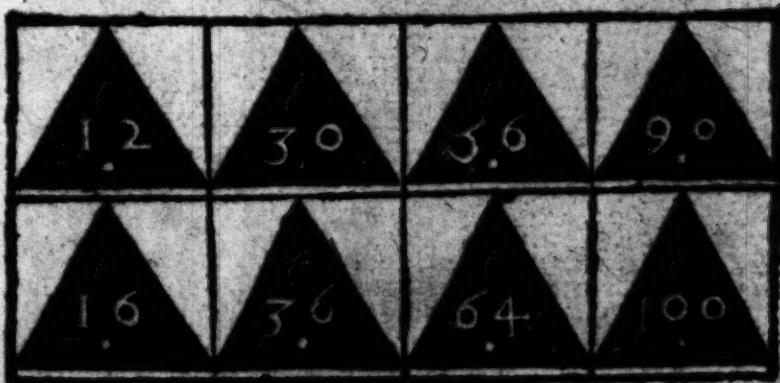
The Philosophers game.  
Sesquialter, sesquiquart, sesqui, sext, sesqui, oct.

3      5      7      9



Sesquiter, sesquiquint, sesquisept, sesquinona.

4      6      8      10



# The Philosophers game.

## Superpartiens proportion.

**T**HIS superpartiens proportion is when the greater number containeth the lesser and mo partes of it then one as. 15. contyneth .9. and .6. whiche is two thirdes of .9. lyke lyse. 28. toteineth .15. and .12. that is  $\frac{3}{4}$  of .15. This proportion contyneth diuers parts besydes the whole number therfore is well shewed in the square, which also containeth more corners and sides.

For the maner of their proportion consider thys table.

1	8	8	8	8
8	8	8	8	8

# The Philosophers game.

## The first order of squares.

6	2.0	4.2	7.2
9	2.5	4.9	8.1
15	43	91	153
12	30	36	90
16	36	64	192
28	66	120	190

suppar-  
ticularly  
added

being  
the  
squares!

# The philosopher's game.

## The second order followeth.

third

5.

10.

fift

9.

36.

seventh

13.

78.

ninth

57.

135.

15

45

91

155

25

81

169

289

superbi-  
partiens  
tortias.

supquadru-  
partiens  
quintas.

supsextu-  
partiens  
septimas.

supocu-  
partiens  
nonas

# The Philosopher's Game.

Fourth and fifth Eight.

7.	11.	15.	19.
21.	55.	105.	171.

28	66	120	190
49	121	223	361

Superti-  
partiens.  
quartas.

21. 11213  
21. 11213  
*sextas.*

Suppon-  
rupartientz.  
septuages.

21. 11213  
21. 11213  
*sextas.*

Suppon-  
rupartiens.  
Octavas.

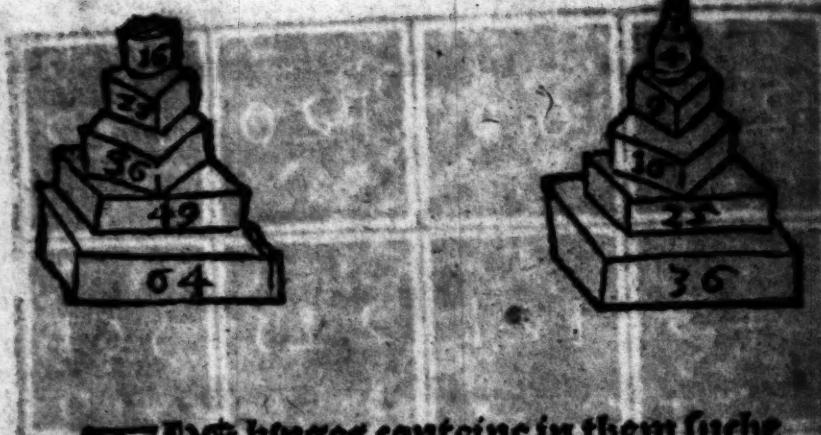
21. 11213  
21. 11213  
*sextas.*

Suppon-  
partiens.  
decimas.

21. 11213  
21. 11213  
*sextas.*

# The philosopher's game.

## ¶ Of the kings.



The kinges conteine in them such numbers, as beynge all added together, make the whole pyramidall number, the lowest square of the even, is 36. which riseth of the multiplying of .6. in it selfe. The next square that must be lesse, is .25. arisinge by the multiplyinge of syue in it self and so followeth .16. of .4. then .9. of .3. laste .4. of .2. and single .1. all these added together, make .91. After the same maner consisteth the king of oddes. The lowest square is .64. arisinge of .8. multiplied in himselfe. The next .49. of 7. times

## The Philosophers game.

7. times. 7. then. 35. of. 6, 25. of. 5. and. 15. of  
4. these numbers make the whole pyramide  
midall number. 190. which because it ri-  
seth not to the poynt of one, oughte not  
to be sharpe poynted, as hathe beens  
sayde before.

## C Of the placing, encam- ping or letting in atake.

**T**o retorne againe to the plainc and  
caspe playng of this game, next to  
the armes & their armour, followyn  
ether the order of their battell or encam-  
ping. Whiche because it is more playng  
and easely seen whiche the eye, then lear-  
ned by the eare, I referre thee unto the  
table whiche the battell is appoynted in  
suche order as thy kynde of playng  
requireth.

W.G.



# The philosopher's game.

## C Of the marchinge or remouing of the men.

**T**he batell being dously placed, it followeth next, to know the maner of marching & remouing, for every kynde of men, have their proper kynde of motion, and syntre we will speake of the roundes.

## C The motyoun of the roundes.

**T**he roundes will be moued into the space that is next unto them to the lyfe, as in the table, from the syde A. to any of these. B. C. D. & E.

## C Of the triangles.

**T**he triangles passe these spaces, countynge that in whiche they leape for some, and that into whiche they do remoue for another, that is leaping ouer

W. iij. one

**The Philosophers game.**  
one space. As from the space. A. he maye  
remoue into any of these spaces. I. S.  
H. or. 3. this is the motion of the trian-  
gle in marchyng or takyng. But in fly-  
ing he maye remoue the knygtes  
draught of the chesse, as from. I. into. 2.  
or. III. &c.

**C Of the Squares.**  
**T**he Squares remoue into the  
fourth place from them, that is leav-  
ing ouer two, right forwarde or  
sydelong, as from the place of. A. to any  
of these spaces. L. R. M. flyinge  
they maye remoue after the knygts  
draught, but that they must passe fourt  
spaces, as from. P. to. P. or. T. &c.  
And this for the marchinge and remo-  
ving of the men, where note, that with  
they; flyng draughte they can take no  
man, but if needs be helpe to besiege  
a man.

**C Of the kyngs marching.**  
**T**he kyngs because ther beare forme  
of all of the kyngs, may remoue any  
two ymperial or cardinals of swome  
one . vi. &c

The philosopher's game.  
of all they draygins when they list, in  
to the nexte with the rounde, into the  
thysde with the triangle, and into the  
fourth with the square, and finally in all  
poyntes lyke the Queene at the Chessie,  
saing that he can not passe above four  
spaces at the most.

### ¶ Of the maner of taking.

The men may be taken ffor swayres,  
namely by Equalitie, Obsidion,  
Addition, Substraction, Multipli-  
cation and Dimission, and also ff you  
will, and soagree, by  
Arithmeticall.  
Proportion or Geometricall,  
Musicall.

### ¶ Of Equalitie.

¶. viij.

¶

¶. viii.

## The Philosophers game.

**B**y equality men may be taken, when one man after hys motion, seith hym enemye beyng of the same number that he is, standynge in such place as he may remoue into, then may he take away hys enemye and not remoue into his place, as in this example. 9. a triangle of the euē army, after he hath remoued, espyeth .9. a rounde of the odde armie, hym may he take vp and not remoue into his place. But if .9. the triangle, espye nine the rounde, before he remoue, standynge in his draught, he may take hym vp and remoue into his place.

These men may be taken by equalitie .9. 16. 25. 36. 49. 64. 81. because they are found in both the armies, and in as much as anye man taken beinge turned uppon hys bottome upward, that beareth hys aduersaries colloure, may serue his enemye on whose syde he is taken, there maye yet be taken by equalitie .4. and 6.

# The Philosophers game.

## Of taking by obfition.

By obfition any man may be taken  
Even the kinge him selfe, if he be to  
compasse with 4. men that hys law  
full draught be hindered, as for example  
the round standing in the place of .1. and  
4. men of what kynd it Chapletly not, or  
copying the places of .2. .3. .4. .5. after you  
haue set your last man in hys place may  
be taken vp , also if a triangle be enclo-  
sed, as in .a. with any fourre and standing  
in .b. .c. .d. .e. he may be taken, even so may  
a square be taken . Also Trianglics and  
Quarels may be besieged, if al .4. fourre and  
or any of them, the rell standynge nearer,  
doe stande in the thyrdre or fourth space  
from them so that they haue no waye to  
remoue , as a triangle or square standing  
in .a. may be besieged by .4. men of any  
of them (the rell standynge nearer) in  
.F. .G. .H. .I. Also a square standing in .a.  
maye be taken by obfition, of the folow-  
ing men

**The philosopher's game.**  
men or some of them (the rest standing  
nearer) doe stande in L. P. P. M. And  
this is sufficient for Oblition, by which  
every man may be taken in manner and  
forme as it hath bene taught.

### **Of taking by Addition.**

**W**hen two numbers are so brought  
that they synde one of them ene-  
mies, which is as muche as bothe  
they being added together, standing in  
such place as bothe they might remoue  
into, they shall take hym vp, without  
remouing into his place, so soone as the  
latter of those two is set downe, but  
if the aduersaries men be in their daun-  
ger before they remoue, one of them  
whether the player lyft, shalbe remoued  
into the place of that man which is ta-  
ken by Addition. As for example. if the  
triangle is in. A. if you can bring fire the  
rounde, to stande in. B. and. C. the trian-  
gle to stande in. C. because. C. and. C. be-  
ing added make. 12. and bothe maye re-  
move to. A. you maye take by the tri-  
angle

## The Philosophers game.

angle.12. by addition. Also 120. the square standing in. 12. and. 49. the rounde standing in. 13. or elles. 49. the square standing in. 1. which being added together make. 69. which standeth in. 2. shal take the sayde square. 169. by Addition.

## C Of taking by Subtraction.

When two men do so stande, that the lesser beyng subtracted out of the greater, the number remaining, is all one with the aduersaries man that standeth in bothe their draughtes, so soone as the latter is set in his place, he may take awaie the aduersarie, not remouing into his place, unlesse he finde him so before he remoue: as for as example, 2. the rounde standing in. 13. & 9. the triangle standing in. 5. shall take theyr aduersarie. 7. standynge in. 2. for 2. out of 9. remayneth. 7. Another example.

## The Philosophet's game.

The rounde.2. standyng in .A. may be  
taken by .3c. the Triangle standyng in  
.B. and the square.28. standyng in .B. may  
take.28. out of .30. and their remaingef.2.

## C Of takynge by multiplic- cation.

**W**hen two numbers stande so, that  
being multiplied one by the other,  
the producte is all one with their  
aduersaries man standyng in both  
their draughts, they may take that man  
asone as the latter is placed. And if they  
lye so before thei remoue, being so left of  
þ aduersarie, one of them shal succeeđ in  
his place that is taken , as in example.  
The rounde.3. standeth in .D. and 5. stand-  
deth in .C. these two shal take the square  
15. standyng in .A. because three tymes  
fifte is 15. another example. The rounde  
2. standing in .B. and the triangle.5. stand-  
dynge in .J. shall take their enemys the  
triangle.12. standing in .A. by multipli-  
cation for 2. tymes 5. is 12.

## The Philosophers game.

### C Of takyng by Division. T

By diuision a matrice may be taken; when twoo of his tenuys doe so stand, that one of them beyng deuided by the other, the product is the same that their enemye is, standyng in their draught, immediatly after the latter is placed, the tenuye may be remoued. If he herte lost in their daunger before comynge, one of them may remoue into his place, an example. The round 4. standyng in D. and the triangle, no standing in F. may take h aduersarie, standing in A. by diuision, by capte. 4. in. 20. is comtyned. 5. spynes. Another example, the round. 5. standyng in B. and the triangle 30. standyng in F. maye take their enemye. 5. standyng in A. for 5. in 30. is comtyned. 6. spynes.

### C Of the takyng of the bynges. The

chaf R

## The Philosophers game.

**T**he game is never wonne , vntyl  
the King be taken. The Kings(as  
hath bene sayde) may remoue amye  
way, so they passe not the fourth space.  
They can not be taken by equaltie.  
But by oblidion the whole kyng maye  
be taken away. Also his whole number  
at ones, that is .91.02.190. by Addition, by  
Substraction, by Multiplication, or by  
Division. Also he maye be taken by  
partes, when any of hys syde numbers  
maye be taken then lefeth he that  
draughte , as when amye of hys square  
numbers is gone he can not remoue the  
square draught, and so of the rest, syld no-  
thyng of him be left , then maile he be  
taken away, and the triumph prepared.

## C The lawe of prisoners.

**W**hen amye is taken captaine, he must  
be tourned. With his conquerours  
colloz upward & placed in the hu-  
dermost space of his victors campe, and  
from thens being remoued must fight  
against his conquerours enemies, and  
serue him also to make his triumph.

A table

A Table to take any of the numbers by addition  
subtraction, multiplication or division.

Addition.		Subtraction.		Addition.		Subtract.	
1	8	0014	02	80	56 64	1023	0010
2	3	4257	42 87	3	94	130	36 66
3	4	4	53 9	921	360 45	30	42 72
4	5	48	8 13	921	722 81	30	90 120
5	6	42	12 16	902	812 90	30	81 121
6	7	46	16 20	902	91 100		36
7	8	40045	7149		125	36	36 72
8	9	001502		102	167 28	36	45 81
15	16		7	12	12 30 42	36	64 100
120	121		15	30	21 15	45	
2		20	25	15	30 45	42	49 91
3	5	27	30	102	49 64	45	64 108
4	6	6		15	66 81	45	noth.
5	7	6	15	32	102 125		
6	8	6	9	15	15 20 36	49	91
7	9	6	12	30	16 36 72	49	72 120
28	30	62	36	42	16 253 162	49	120 169
64	66	6	66	72	22 20	56	
3			7	20	25 45	56	64 120
4	7	7	8	15	20 35 56	56	169 225
5	8	7	9	16	20 300 120		64
6	9	7	42	49	21 252	64	225 187
9	12	7	49	56	25 56 81		72
12	15		8	25	45 91	72	81 153
42	45	3	12	20	28	72	225 187
		3	20	28	28 36 64	72	28 361
		3	28	36	28 72 100	72	nothig

# The Philosopher's game.

RECOMMENDED TO SCHOOL CHILDREN, COLLEGE STUDENTS,

Addition.	Multiplication & Division.
90	9 9 45
90.100.290	2 3 6 5 20 300
90 98	2 4 8 5 45 125
98 northig	2 6 12 6
100	2 8 8 6 6 36
100. north.	2 15 30 6 7 42
120	2 28 56 6 12 72
120 169.289	3 36 72 6 15 90
121	2 45 90 6 20 120
121.169.290	3 3 7
153	3 4 12 7 3 90
169	3 9 19 3
190 north.	3 12 36 3 9 72
215	3 15 45 3 15 720
239	3 30 90 9
361	4 4 16 3 9 87
361	4 5 20 3 27 237
42	4 7 28
42	4 9 36
42	4 16 64
42	4 25 100
42	4 30 120
	5
	5 6 30 8
	82
	30 62 82 82 82
	20 20 20 20 20

## The Philosophers game.

By this Table any man though he haue small or no skil in Arithmetiche, maye learne to playe at this game, and in playinge learne some parte of Arithmetiche.

## C Of tabyngē by p̄t̄ portion.

If the Gamesters be disposed, they maye take men also by proportion, Arithmetical, Geometrical, or Musciall. But because it is not necessarily required that they shoulde so do, I wylly synt prosecute the maner of triumph, in which also they maye learne to take by proportion, as afterward shalbe seene. For when they can ioyne two or thre of their men to one of their aduersaries men in such order as the triumph is set, so that those three or four numbers name amye of these three proportions they maye take their aduersaries man.

C.i.

C.ii.

# The Philosophers game.

## C Of the triumphs.

When the King is taken, the triumph must be prepared to be set in the aduersaries campe. The aduersaries campe is called al the space, that is betwene the first front of his men, as they were first placed, vnto the neither ende of the table, conteyning 40. spaces or as some wil. 48. When you entend to make a triumph you must proclaim it, admonishing your aduersarie, that he medle not with anye man to take hym, whiche you haue placed for your triumph. Furthermore, you must bring all your men that serue for the triumph in their direct motions, and not in they flying draughtes.

To triumph therefore, is to place three or four men within the aduersaries campe, in proportion Arithmetical, Geometrical or Muscall, as wel of your owne men, as of your enemys men that be taken, standing in a right

lyne

## The Philosophers graine.

lyne, direct or croise, as in. D. A. B. or els  
5.1.3. if it consist of three numbers, but if  
it stande of four numbers, they maye  
be set lyke a square two agaynst two, as  
in. E. B. D. C. or 2.3.4.5. and after the  
same maner muste you set them so that  
your aduersaries man maect the thyrd  
or fourth, when you take by proportion.

## C Of dyuers kyndes of triumphes.

Here be thre kyndes of triumphes  
a great triumphe , a greater tri-  
umph, and the greatest and moste  
noble of all.

## C Of the great triumph.

The great triumph standeth in pro-  
portion , ryther Arithmeticall,  
Geometrical, or Muscicall onely.

C.y.

C Of

## The Philosophers game.

### ¶ Of Arithmetical proportion.

A Rithmetical proportion is when  
a mynde number differeth as much  
from the first , as from the thynne,  
that is to saye , when the thynne hath  
so many more , from the seconde , as the  
seconde hath from the first , as .1.4.6.  
Here , two , is the dillans , for .4. exceedeth  
.2. by two , & .6. is more then fowre by .1.

### ¶ A rule to synde out Arith- meticall proportion be- twene the firste and the laste.

W hen you haue the first and the last  
if you woulde finde out the middle  
in proportion . Adde the first & the  
last together , and deuide the whole in  
2. for the halfe is the middle in proportion

The Philosophers game.  
as I woulde knowe what is the middle  
number in proportion betwene .5. and  
.25. first I adde .5. to .25. that is .30. the half  
of thirtie is .15. whiche is middle in pro-  
portion betwene .5. and .25. so hanc

3.5.5. in Advance.

## **Official proposals**

100

A table of all the Arithmetical proportions that be in  
this game.

2	3	4	6	7	8	28	64	100
2	4	6	6	9	12	30	36	42
2	5	8	6	36	66	42	49	56
2	7	12	7	8	9	42	66	90
2	9	16	7	16	25	49	169	289
2	15	28	7	64	121	96	64	71
2	16	30	9	12	15	72	81	90
3	4	5	9	45	81		49.	
3	5	7	9	81	153			
3	6	9	12	16	20			
3	9	15	12	20	28			
4	5	6	12	42	72			
4	6	8	12	66	120			
4	8	12	15	20	25			
4	12	20	15	30	45			
4	20	36	15	120	225			
4	30	56	16	36	56			
5	6	7	20	25	30			
5	7	9	20	28	36			
5	15	25	20	42	64			
5	25	45	28	42	56			

## The Philosophers game.

### ¶ Of Geometricall proportion.

Geometricall proportion, is when the seconde hath that proportion to the first, that the thyrd hath to the seconde, as. 2.4.8.as . 4 . exceedeth.2. by 2, so.8.exceedeth.4. by.4.

### ¶ A rule to fynde the mydle number in Geometricall proportion.

Multiply the firste by the thyrd, and of the product fynde out the roote square, so that is the middle, if the numbers haue anye roote square in whole numbers. The roote square is a number multiplied in it selfe, wherefore you muste seeke such a number , as multiplied in it selfe, maketh þ producte of the fyrist and the thyrd number multiplied one by the other.

C. iij. As.

## The 2d Philosophers game.

As . 20 . multiplied by . 45 . is . 900 . the  
root is . 30 . square, whiche multiplied in  
it selfe is . 900 . But ys you lyke not to  
take such paynes , here is a Table that  
maye serue your tourne for Geometricall  
proposition to be wised  
in this game .

## A table

for Geometricall  
proposition to be wised  
in this game .

As . 10 . is . 100 . then . 10 . is . 100 .  
As . 20 . is . 400 . then . 20 . is . 400 .  
As . 30 . is . 900 . then . 30 . is . 900 .  
As . 40 . is . 1600 . then . 40 . is . 1600 .  
As . 50 . is . 2500 . then . 50 . is . 2500 .  
As . 60 . is . 3600 . then . 60 . is . 3600 .  
As . 70 . is . 4900 . then . 70 . is . 4900 .  
As . 80 . is . 6400 . then . 80 . is . 6400 .  
As . 90 . is . 8100 . then . 90 . is . 8100 .  
As . 100 . is . 10000 . then . 100 . is . 10000 .

# The philosopher's game.

## A Table for Geometrical proportion.

3	4	8	16	32	64
2	12	72	20	30	45
3	6	12	25	30	36
4	6	9	25	45	81
4	8	16	36	42	49
4	12	36	36	66	121
4	16	64	36	90	225
4	20	100	49	56	64
5	9	49	49	91	169
9	12	16	64	72	81
9	15	21	25	30	45
9	45	225	81	90	100
16	20	125	25	35	289
16	28	49	—	27	—

C.ii.

C.D.

## The Philosophers game.

### ¶ Of Musicall proportion.

**M**usicall proportion is when the differences of the first and last from the middes, are the same, that is betwene the first and the last, as. 3.4.5, betwene 3. and 4. is 1. betwene 4. and 6. is 2. the whole difference is 3. which is the difference betwene 5. and 3. the first and the last.

### ¶ A rule to fynde the first, when you haue the two last.

**M**ultiply the seconde by the thyrd, deuide the producte by the diffirence and the thyrd number, and the quotient is the first, as having 6. and 12. I would fynde the first, 6. tyme 12. is 72, the difference betwene 6. and 12. is 6, whiche added to 12. is 18, deuide 72. by 18. the quotient is 4. so haue you 4.6.12. in Musicall proportion.

¶

## The Philosophers game.

**C**To finde the mydle betwene  
the first and the last.

**M**ultiplie the first by the last , then  
double the producte , and deuide  
the whole by the first and the laste  
added together, the quotient is then the  
mydle number . As hauyng .6. and .12. I  
woulde knowe the mydle in Muscall  
proportion . First I multiplie one by the  
other , the product is .72. that doubled is  
.144. this devided by .18. which is the ad-  
dition , of .6. and .12. geneth the quotient  
.8. so haue I .6. .8. .12. in muscall propor-  
tion . And thus must you worke to fynde  
out the thyde in muscall proportion .

But if you had rather playe then ??

worke , this table folowing

Shall serue your  
tyme .

	DE	DE
PP	PP	EE
OO	OO	EE

**A table**

o<sup>t</sup> d<sup>e</sup> rule to fynde out y<sup>e</sup> last no  
is by multiplieng y<sup>e</sup> firste from  
together & then deuiding y<sup>e</sup> product  
by y<sup>e</sup> difference of y<sup>e</sup> firste & second  
taken from y<sup>e</sup> first number .

# The Philosopher's game.

## A table of Muscall proportion.

2	3	6	12	18	36	72	144	216	432	864	1728	3456	6912	13824	27648	55296	110592	221184	442368	884736	1769472	3538944	7077888	14155776	28311552	56623104	113246208	226492416	452984832	905969664	1811939328	3623878656	7247757312	1449551464	2899102928	5798205856	1159641172	2319282344	4638564688	9277129376	18554258544	37108517088	74217034176	14843406832	29686813664	59373627328	11874725456	23749450912	47498901824	94997803648	189995607296	379991214592	759982429184	151996485832	303992971664	607985943328	121597188656	243194377312	486388754624	972777509248	1945555018496	3891110036992	7782220073984	15564440147968	31128880295936	62257760591872	124515521183744	249031042367488	498062084734976	996124169469952	199224833893984	398449667787968	796899335575936	1593798671151872	3187597342303744	6375194684607488	12750389369214976	25500778738429952	51001557476859904	102003114953719808	204006229907439616	408012459814879232	816024919629758464	1632049839259516928	3264099678519033856	6528199357038067712	13056398714076135424	26112797428152270848	52225594856304541696	104451189712609083392	208902379425218166784	417804758850436333568	835609517700872667136	1671219035401745334272	3342438070803490668544	6684876141606981337088	13369752283213962674176	26739504566427925348352	53479009132855850696704	106958018265711701393408	213916036531423402786816	427832073062846805573632	855664146125693611147264	171132829225338722228488	342265658450677444456976	684531316901354888913952	1369062633802709777827840	2738125267605419555655680	5476250535210839111311360	10952501070421678222622720	21905002140843356445245440	43810004281686712890490880	87620008563373425780981760	175240017126746851561963520	350480034253493703123927040	700960068506987406247854080	1401920137013974012495708160	2803840274027948024985416320	5607680548055896049970832640	11215361096111792099941665280	22430722192223584199883330560	44861444384447168399766661120	89722888768894336799533322240	179445777537788673598566444480	358891555075577347197132888960	717783110151154694394265777920	1435566220302309388788535559840	2871132440604618777577071119680	5742264881209237555154142239360	11484529614184675110308284478720	22969059228369350220616568957440	45938118456738700441233137914880	91876236913477400882466275829760	183752473826954001764932551659520	367504947653908003529865103319040	735009895307816007059730206638080	1470019790615632014119460413276160	2940039581231264028238920826552320	5880079162462528056477841653104640	11760158324925056112955683306209280	23520316649850112249111366612418560	47040633299700224498222733224837120	94081266599400448996445466449674240	18816253319880089799289093289934880	37632506639760179598578186579869760	75265013279520359197156373159739520	150530026590407118385312746319579040	301060053180814236770625492639158080	602120010761628473541250985278376160	1204240021523256947082509775556552320	240848004304651389416501955111304640	48169600860930277883300391022260880	96339201721860555766600782044521760	19267840344372111533200156408843520	3853568068874422306640031321768640	7707136137748844613280062643537280	15414272275497689226560125267144560	30828544550995378453120250534289120	61657089101990756906240501068578240	123314178203985133812401021371556480	24662835640797026762480204274311280	49325671281594053524960408548622560	98651342563188107049920817097245120	19730268512637621409981634119449040	39460537025275242819963268238898080	78921074050550485639926536477796160	157842148101008971279853072955592320	315684296202017942559706145911184640	631368592404035885119412291822369280	1262737184808071770238244583644738560	2525474369616143540476489116729477120	5050948739232287080952978233458954240	10101897478464544161905956466917908480	20203794956929088323811912933835816960	40407589913858176647623825867671633920	80815179827716353295247651735343267840	161630359655432706590495303470686535680	323260719310865413180990606941373071360	646521438621730826361981213882746142720	1293042877243461652723962427765492284400	2586085754486923255447924855530984568800	5172171508973846510895849711061969133600	10344343017947693021791699422123888267200	20688686035895386043583398844247776534400	41377372071790772087166797688495533068800	82754744143581544174333595377981066137600	16550948828716308834666790755592013355200	33101897657432617669333581511184026708000	66203795314865235338667163022368053416000	132407589629130470677334326044736106832000	264815179258260941354668652088472213664000	529630358516521882709337304176944427328000	1059260717032637765418674083533888844576000	2118521434065275530837348167067777775520000	4237042868130551061674696334135555550400000	8474085736261102123349392668271111008000000	16948171472522042246797853364542222016000000	33896342945044084493595706729084444032000000	67792685890088168987191413458168888064000000	135585371780176337974382826916337776128000000	271170743560352675948765653832675552256000000	542341487120705351897531307665351105120000000	1084682942414010703795066015330702210240000000	2169365884828021407585132030661404420480000000	4338731769656042815170264061322808840960000000	8677463539312085630340528122645617619200000000	17354927078624171260680564253291353238400000000	34709854157248342521361128506582706776800000000	69419708314496685042722257013165413553600000000	138839416629993410085444514026328271072000000000	277678833259986820170888828052656542144000000000	555357666519973640341777656105313104288000000000	1110715333039872806823553312210626208560000000000	2221430666079745613647106624421252417120000000000	4442861332159491227294213248842548342400000000000	8885722664318982454588426497685096688000000000000	17771445328637964909176852955370193760000000000000	35542890657275929818353705850740387320000000000000	71085781314551859636707411701480774640000000000000	142171562629103719273414823402961548800000000000000	284343125258207438546829646805923097600000000000000	568686250516414877093659293611846095200000000000000	1137372501032829554187385867223692190400000000000000	2274745002065659108374771734447384380800000000000000	4549490004131318216749543468894768761600000000000000	9098980008262636433498586937789537323200000000000000	1819796001652527286697173387557907466400000000000000	3639592003305054573394346775115814928800000000000000	7279184006610109146788693550231629857600000000000000	1455836801322021829357387110046325975200000000000000	2911673602644043658714774220092651952000000000000000	5823347205288087317429548440185303904000000000000000	1164669441057615663485909688037061780800000000000000	2329338882115231326971819376074123561600000000000000	4658677764230462653943638752148247123200000000000000	9317355528460925307887277504296494246400000000000000	1863471105692185061577455500859298891200000000000000	3726942211384370123154911001718597782400000000000000	7453884422768740246309822003437195564800000000000000	1490776884533780449261964400685491112800000000000000	2981553769067560898523928801370982225600000000000000	5963107538135121797047857602741964451200000000000000	1192621507627024359409571520548392890400000000000000	2385243015254048718819143041096785780800000000000000	4770486030508097437638286082193575561600000000000000	9540972061016194875276572164387151123200000000000000	1908194412203238975155144232874230224640000000000000	3816388824406477950310288465748460449280000000000000	763277764881295590062057693149692089840000000000000	1526555529762591180121153386293841796800000000000000	3053111059525182360242306772587683593600000000000000	6106222119050364720484613545175367187200000000000000	1221244423810072944096926709035074374400000000000000	2442488847620145888193853418070148788800000000000000	4884977695240291776387706836140295777600000000000000	9769955390480583552775413672280591555200000000000000	1953988678096116710555082734456193110400000000000000	3907977356192233421110165468912386220800000000000000	7815954712384466842220329937824772441600000000000000	1563190942476893684440658975569554883200000000000000	3126381884953787368881317951139109766400000000000000	6252763769907574737762635902278219532800000000000000	1250552753981514947552527180455643865600000000000000	2501105507963029895105054360911287731200000000000000	5002211015926059790210108721822575462400000000000000	1000442203185211958042021744365015124800000000000000	2000884406370423916084043488730030249600000000000000	400176881274084783216808697746006049840000000000000	800353762548169566433617395492012099680000000000000	160070752589633913286723479098402419360000000000000	320141505179267826573446958196804838720000000000000	640283010358535653146893916393609677440000000000000	128056602071707106629378783278721935488000000000000	256113204143414213258757566557443870960000000000000	512226408286828426517515133114887741920000000000000	102445281653365685303503066623775543840000000000000	204890563306731370607006133247551188800000000000000	409781126613462741214012266495102277600000000000000	819562253226925482428024532990204555200000000000000	163912450645385016456048906598040911040000000000000	327824901290770032912097813196081822080000000000000	655649802581540065824195626392163644160000000000000	131129760516308013164838725278432728320000000000000	262259521032616026329677450556865456640000000000000	524519042065232052659354901113731013280000000000000	104903808413046410531870882226546202656000000000000	209807616826092821063741764453092405312000000000000	419615233652185642127483528906184810624000000000000	839230467304371284254967057812369621248000000000000	167846093460874256850993511562473924248000000000000	335692186921748513701987023124947848496000000000000	671384373843497027403974046249895696960000000000000	134276874768699405480794809249791393920000000000000	268553749537398810961589618499582787840000000000000	537107499074797621923179236999165575680000000000000	107421499814959524384635857399833115360000000000000	214842999629919048769271714799666230720000000000000	429685999259838097538543429599332461440000000000000	859371998519676195077086859198664922880000000000000	171874398029335238015417771839733984576000000000000	343748796058670476030835543679467969120000000000000	687497592117340952061671087358935938240000000000000	137499518423468104032334017471787186480000000000000	274998036846936208064668034943574372960000000000000	549996073693872416129336069887148744920000000000000	109999214738744483225868013977429489840000000000000	219998429477488966451736027954858979680000000000000	439996858954977932903472055909717959360000000000000	879993717909955865806944111819435918720000000000000	175998743581986771761388222363887183440000000000000	351997487163973543522776444727774366880000000000000	703994974327947087045552889455548733760000000000000	140798992655589417409104577891109546560000000000000	281597985311178834818209155782219093120000000000000	563195970622357669636418311564438186240000000000000	112639194124471533927236622312876372480000000000000	225278388248943067854473244625752749600000000000000	450556776497886135708946489251505499200000000000000	9011135529957722714178929785030109

# The Philosophers game.

## Of the greater tri- umph.

The greater victorie is, when sone  
numbers be broughte together,  
whiche agree in two proportions,  
either Arithmeticall and Geometricall,  
or elles Arithmeticall and Muscall, or  
elles Geometricall and Muscall. Of  
these three coniunctions the greater  
triumph consisteth of the which

the table foloweth.

### A table

### A table

A table of Arithmetical, and Geometrical proportion.

2	3	4	8	9	12	15	16
2	4	6	8	9	12	15	25
2	4	6	9	9	12	16	20
2	4	5	8	9	45	81	225
2	7	12	72	9	25	45	81
2	9	12	16	9	12	16	20
2	12	42	72	9	15	20	25
3	6	9	12	9	8	15	289
3	4	6	9	12	16	20	25
3	9	15	25	15	16	20	25
4	5	6	9	15	20	30	45
4	6	8	9	16	20	25	30
4	6	9	12	16	36	56	81
4	6	8	16	20	25	30	45
4	12	20	36	30	36	42	49
4	8	12	16	36	42	40	56
4	8	12	36	42	49	56	64
4	8	16	28	49	56	64	72
4	12	20	100	49.91.	169.289		
4	16	28	49	56	64	72	81
4	36	28	64	64	72	81	90
4	20	36	100	72	81	90	100
5	9	15	25				
5	15	25	45				
5	25	45	81				
6	9	12	16				
7	36	20	25				
7	49	91	169				
8	9	12	16				
8	64	120	225				

52.

Arithmetical  
and musical  
proportion.

Geometrical  
and musical  
proportion  
together.

3	4	5	6	2	3	6	12
3	4	5	15	3	4	6	9
3	4	6	9	3	4	6	12
3	5	7	25	3	6	8	12
3	5	9	15	4	6	12	36
3	9	15	45	4	7	23	49
3	4	6	8	3	9	15	45
4	5	6	12	5	9	45	225
4	6	12	15	5	9	45	81
4	6	12	20	9	12	16	72
4	12	15	20	9	15	25	45
5	7	9	45	9	25	45	225
6	7	8	12	9	25	45	225
8	15	120	225	15	20	30	45
9	12	15	45	20	30	36	45
9	12	15	20	25	45	81	225
9	15	30	45				
9	15	45	81				
12	15	20	25				
15	20	25	30				
15	20	30	45				
15	30	36	45				
15	30	45	90				
90	36	42	45				
72	81	90	120				

16.

25.

# The Philosophers game,

## C Of the greatest tri- umph.

The greatest triumph is of Arithmetical, Geometrical, and Muscial proportions all toynd together.

Arithmetical, Geometrical, and Muscial proportions, all together.

2	3	4	6	6	8	12	16
2	3	6	9	6	12	15	20
2	4	6	12	7	12	42	72
2	5	8	20	8	15	64	120
2	7	12	42	8	15	120	225
2	9	16	72	12	15	20	20
3	4	6	8	12	15	20	25
3	4	6	9	15	20	36	45
3	5	9	15	15	30	45	90
3	5	15	25		30		
3	9	15	45				
4	6	8	32				
4	6	9	12				
4	7	16	28				
4	7	28	49				
5	6	25	45				
5	9	45	81				
5	25	45	225				
5	15	25	45				
6	8	9	12				

Am

## The Philosophers game.

And thus is the first kynde of playing at an end. And this is sufficient to teach you to play, but if you would learne to play conningly, you must be to playe often, so shall you learne better then by anye preceptes or rules.

## C Of the seconde kynde of playinge at the Philosophers game.

**T**here is in this kynde of playing to be considered, the table, þ men, the marking of them, the setting of them in a rāpe, their matching, their lawes of taking, and the maner of triumphyng.

## C Of the Table.

**T**he Table is the same that was first described, namely a double chefford.

## C Of the men.

D.L. The

## The Philosophers game.

**T**he men be as before in number  
48,23.on a syde, and two contrarie  
kynges of euene and of odde . They  
must be of diuers colours, as bath been  
sayde , the bottome of every one must  
haue his enemies colour, and his owne  
mark of number, differing in this pointe  
from the former playing , that the ene-  
mies men taken, may serue onely to ce-  
lebrate a triumphe , but not to fight on  
his syde that taketh them.

## ¶ Of the marking of the men.

**T**hey be marked with the same nu-  
mers, that haue bene shewed before  
and therefore so are to be founde  
out as is taught before . But they be  
marked besyde their numbers , with coll-  
call signes , which be signes used in the  
rule called regula cossa, or algebra, betw-  
een rwoes, quadrats, cubcs, foursquare  
quadrats, sursolides, & quadrates of  
cubes . All these signes must be con-  
teyned in thyg game.

# The Philosopher's game.

{ of the rote.  $\sqrt{2}$   
{ of the quadrate.  $\sqrt{2}$   
The { of the cube, or solide quadrat.  $\sqrt[3]{2}$   
Ligne { of the four squared quadrat.  $\sqrt[4]{2}$   
{ of the sursolide.  $\sqrt[5]{2}$   
{ of the squared cube.  $\sqrt[6]{2}$

Every number maye be taken for a  
rote, as. 2. this number multiplied  
in it self is a square as. 4. The qua-  
drat or square multiplied by the rote ge-  
ueth a cube or solide square, as. 4. mul-  
tiplied by. 2. geth. 8. that is a cube.  
Multiplie the cube by the rote, so haue  
you a squared quadrat, as. 8. by. 2. geth  
16. which is a quadrate of a quadrate.  
Multiplie the square or quadrat of qua-  
drat by the rote, and the product is the  
sursolyde, as. 2. tymes. 16. is. 32. whiche is  
A sursolide. Multiplie the sursolide by  
the rote, and the product is the quadrate  
of a cube, as. 2. tymes. 32. is. 64. which is a  
quadrate of a cube. So haue you the rote  
quadrate, cube, quadrate of quadrate, surso-  
lide, quadrate of cube. 2. 4. 8. 16. 32. 64.

## The Philosophers game.

No. 2. referred to. 4. is a roote of a square,  
referred to. 8. it is a coote of a cube, 2. re-  
ferred to. 16. is the roote of a fourte square  
quadrate, 2. referred to. 32. is the roote  
of a sursolid, 2. referred to. 64. is the roote  
of a quadrate of a cube. These numbers  
muste haue the proper collicall signes.  
Also one number having diuers relati-  
ons, may haue diuers collical signes, as  
9. referred to. 81. being roote, hath the  
signe of a roote  $\sqrt{ }$ , but. beyng referred  
to. 3. it hath the signe of a quadrate, so it  
is a quadrate of. 3. and is thus signed.  $\sqrt{ }$ .  
and so of the rest that haue like relation.

## [The marking of the men.]

The first order of roundes in both  
numbers, must haue the signe of the  
roote vpon them al after this maner.



### The philosopher's game.

The second order of roundes founde  
out as before, be not all marked  
with cōfūcāl signes, but onely.4.  
and.9. with the roote, and.31. with the  
quadratē. The rest haue none, because  
amonge their aduersaries men there is  
none that can be losticall roote to them  
in such manner as this game requirēth.



The first order of triangles (hauyng  
the same numbers that haue bene  
taught before) do all lack the cōfū  
cāl signes, except onely.6. which is si  
gned with the roote.

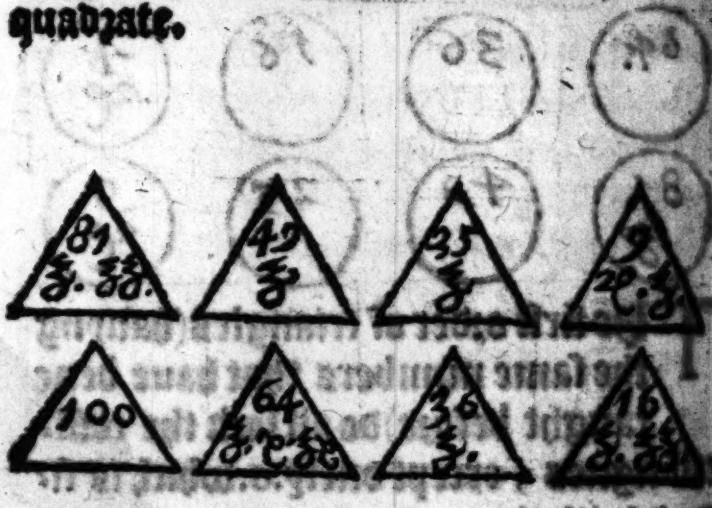


C. itf.

The

## The Philosophers game.

The seconde order of triangles, haue  
all excepte one (whiche is the num-  
ber of. 100.) their collicall signes, as  
9. bothe of the roote and of the quadrate,  
25. 35. and. 49. haue the signe of the qua-  
drat. 64. of the quadrate and the cube,  
and also the quadrat of cube. 16. and. 81.  
the quadrate, and the sowne square  
quadrate.



In the firske order of squares, onen  
15. is marked with the roote, all the  
rest doe want theyr collicall sygnes in  
thyg game.

# The philosopher's game.



SING IN BRIGHTLY			
ISO	120	66	28
			

The seconde order of squares hath  
numbers marked with cossicall  
signes, that is. 25. and. 225. wryth the  
signe of the quadrate. 81. is marked with  
the sygne of the quadrate and the four.  
squared quadrate.

D. H. G. And

# The Philosophers game.

289.	169.	81.	21.
		3.3.3.	3.

361.	225.	121.	49.
	3.		

And thus haue you all the men that be  
marked with cōfūcall sygnes.

## C The setting in array.

**T**he teachers of this kynde of playng, doe not so well allowe, the former kynde of placing of any other, as the naturall placing of every man under him of whome he aryleth. So that conteyning 6. ranks in length, extending to the furtermothe edge of the Table after this sorte.

1. 2. 3. 4. 5. 6.  
1. 2. 3. 4. 5. 6.  
1. 2. 3. 4. 5. 6.  
1. 2. 3. 4. 5. 6.

ON

. 11. 12.

				49	121	225	361	
				28	66	120		
				16	30	64	96	
				12	18	50	190	
				9	25	49	81	
				3	7	5	3	
				2	4	9	8	
				4	16	50	64	
				6	10	14	20	
				△	△	△	△	
				25	45	75	95	
				25	81	169	289	

# The Philosophers game.

## C The marching or moving.

**T**He men maye remoue every way, into borpde places, forward, backwarde, towarde both sydes, direct or cornerlyse. So that the rounde men remoue into the next space, the triangles into the third place, and the squares into the fourth place, accompting that place in which they stande for one.

Also every man sauynge the two kynges to besiege his enemis, or to lye from the siege hym self, may remoue the knyghtes draught in chesse, but neither take any man (except it be by siege) nor ette a chumphe by suche motions. The kynges moue even as Squares, but that they hanc not the flyinge draughte.

It is compyed lawefull amonge such as wyll so agree, that the Triangles and Squares, maye remoue into borpde places, thoughe the spaces betwene be occupied of other men.

MS. B. 1. 1. 10

The Philosophie of game.

**C**The maner of sayng.

**T**he men may be taken seven wayes  
by Obsidion, by Equaltie, by Ad-  
dition, by Substraction, by Mul-  
tiplication, by Division, and by Conficall  
Sugnes,

**C**Of takynge by Ob-  
sidion.

**A**ll men maye be takyn by Obsi-  
dion when by foute men they be  
leterred of theyz ordinacie vngerte-  
as bath bene taught before.

**C**Of takynge by Equa-  
liti.

**B**y Equaltie maye these men take  
be taken, as hathe bene layde  
before, 9.15.25.35.49.64, 81, as  
ye after you haue played your .9. you  
see your aduersaries .9. stande in  
your

The Philosophers game  
your mans draught , you may take him  
up not remouing into his place, unless  
you espye him standing in your drachm  
before you playe , then muste you take  
him up and remoue into his place,

vj. qd. no mannes qd. no man

### ¶ Of takyng by addition.

The takyng by Addition is all one  
with the first kynde of play, in all  
respects, sauing that some require  
the men that shoulde take by Addition  
to stande in the next spaces to him that  
is taken, either directly, or commingly,  
but the former waye is better.

### ¶ Of taking by subtraction.

That whiche was sayde in the first  
kynde of subtraction and that subtrac-  
tion was last sayde of Addition may  
be both be referred together. For this sub-  
traction

## The Philosophers game.

straction differeth not from the former,  
but so the opinion of them, that would  
have the two takers stande onely in  
the nexte spaces to hym that is taken.

## ¶ Of taking by Multipli- cation.

Taking by multiplication doth dif-  
fer. For in this kynde of playing, it  
is thus. When your man standeth  
so, that beynge lesser then your aduersa-  
ries man, you may multiply your man  
by the dogge spaces betwene them, and  
the product is all one w<sup>t</sup> the aduersarie,  
you may take hym up, not remouyng  
into his place, except you espye hym so,  
before you remoue your man.

## ¶ Of takinge by Di- vision.

Likelwise

## The Philosophers game.

L<sup>e</sup>pkewise by Division, of your men  
beyng greater then the aduersary,  
stande so , that beyng deuided by  
the boyde spaces, the quotient is all one  
with the aduersarye , you maye take  
hem vp , not remouyng into hys place,  
unlesse you see hem so hanoyng before  
you dwale.

## C Of taking by Cossicall signes.

B<sup>y</sup> Cossicall sygnes anye man that  
hath these signes,  $\mathcal{Z}$ . $\mathcal{C}$ . $\mathcal{S}$ . $\mathcal{R}$ .  
by meeting w<sup>t</sup> his roote in his ordinary  
draught that hath this signe  $\mathcal{Z}$ . taken  
him vp, or elles is taken of him, with  
out remouyng into his place; except he  
maye take him before he remoue.

## C Of the kynges, and their taking,

## The Philosophical game.

**T**he King of the even must be fourre  
square, hanynge five steppes, every  
one lasser then other, on one syde he  
muste haue on him these rootes. i. 2. 3.  
4. 5. 6. on the other syde the quadrates ar-  
ruling of these rootes, that is 1. 4. 9. 16. 25. 36.  
**C**the King of the odde men, muste  
haue but fyve steppes, that is 1. 3. 5. 7. 9.  
lackynge the rootes that he can not ende  
in. i. The quadrates of his rootes be  
thcse. 16. 25. 36. 49. 64. These muste be  
so set on, that the least muste be hyghest  
and the greatest lowest.

**C**the Kinges be taken by Obsidi-  
on, or yf they; Pyramidal number, be  
taken by anye of the aforesayde meanes,  
Also yf by suche meanes you can take  
all his quadrates one after another.

## The privilege of the King.

### **The philosophy of your game.**

If ampe of the lynges quoniam he  
taken, he maye redeme it by ampe of  
his men having the same number,  
and muste remoue into hys place, into  
the redemed hym . But if he have  
none of the same number , he maye re-  
deeme hym so ampe man of hys, than  
aduertisement shal chuse , and lyke-  
lye remoue into hys place  
by whome he is re-  
demed.

# The Code of Hammurabi

# The Egyptian Game.

A table to take the men by  
Multiplication and Di-  
vision.

even against odd spaces.	even spaces.	odd spaces.	even spaces.	odd spaces.	odd
6	3	12	8	3	15
8	2	16	4	9	36
15	2	30	9	9	81
45	2	90	25	9	225
4	3	12	9	10	90
4	4	16	16	21.	5
9	4	36	36	3	3
15	4	64	64	3	3
6	5	30	3	2	6
20	5	100	36	2	72
2	6	12	3	3	9
5	6	90	3	3	27
30	6	120	12	3	36
4	7	28	5	4	20
8	7	56	9	4	36
Spaces.		16	4	64	

C.1.

C.3.03

The Philosophical game.  
For Division.

even against odd, odd against even				To take by collateral signs		
Spaces.		Spaces.				
5	2	3	12	2	2	16.00
72	2	36	16	3	2	64.00
15	3	5	30	2	3	81.00
36	3	12	90	2	4	96.00
9	3	3	12	3	3	96.00
20	4	5	16	4	4	16.00
36	4	9	36	4	9	64.00
64	4	16	64	4	16	25.00
15	5	3	100	4	5	- 35.00
25	5	5	22	5	6	- 35.00
45	5	9	30	5	7	49.00
42	6	7	100	6	8	64.00
72	6	12	12	6	9	81.00
49	7	7	36	6	6	- 35.00
72	8	9	90	6	15	225.00
49	9	5	120	6	20	- 50.00
81	9	9	28	7	4	- 22.00
36	12	3	56	7	8	- 22.00
92	13	7	16	8	2	- 22.00
42	14	3	64	8	8	- 22.00
			120	8	15	- 50.00
	20.	3		9	4	- 22.00
		31		9	9	- 22.00
		225		9	25	- 22.00
		90		10	9	- 22.00
		66		11	6	- 22.00
		28		14	3	- 22.00
					270	

## The Philosophers game.

### ¶ Of the triumph.

The triumph is after the Byngē be cleane taken away, to be created in the aduersaries campe, as well of your owne men as of your aduersaries men that be taken, or of both in proportion as hath bene shewed before, and proclaimed that those men ons placed, may not be taken, as it was declared sufficiently, and no difference betwene the triumphes, sauyng that some wyll not alowe a triumphe but of fourre numbers, and two proportions at the least. All three for the greater victorie, makyng but two kyndes of triumphes.

¶ Here foloweth the fyd  
kynde of playing at  
the Philosophers  
gaine.

E.g.      ¶ Here

## The Philosophers game.

There must also in this thysd bynde  
be conforted the table , the men ,  
their markyng , the order of they  
battell , the motions , their taking , and  
last of all they; triumphing .

The table is the same that hath been  
use alreadyd described . yet some wyl  
not hane it so longe , but at the leest  
must conteyne 10 squares in length and  
alwayes 8 in breadeth . The longest  
is bell .

### C Of the men .

The men be 48 as it hath bene bin  
of two contrary coloures , the headyn  
bottom all of one coloure , because  
men ons taken be no moxe occupied in  
this bynde of playing .

### C The inscription and fashion .

## The Philosophers game.

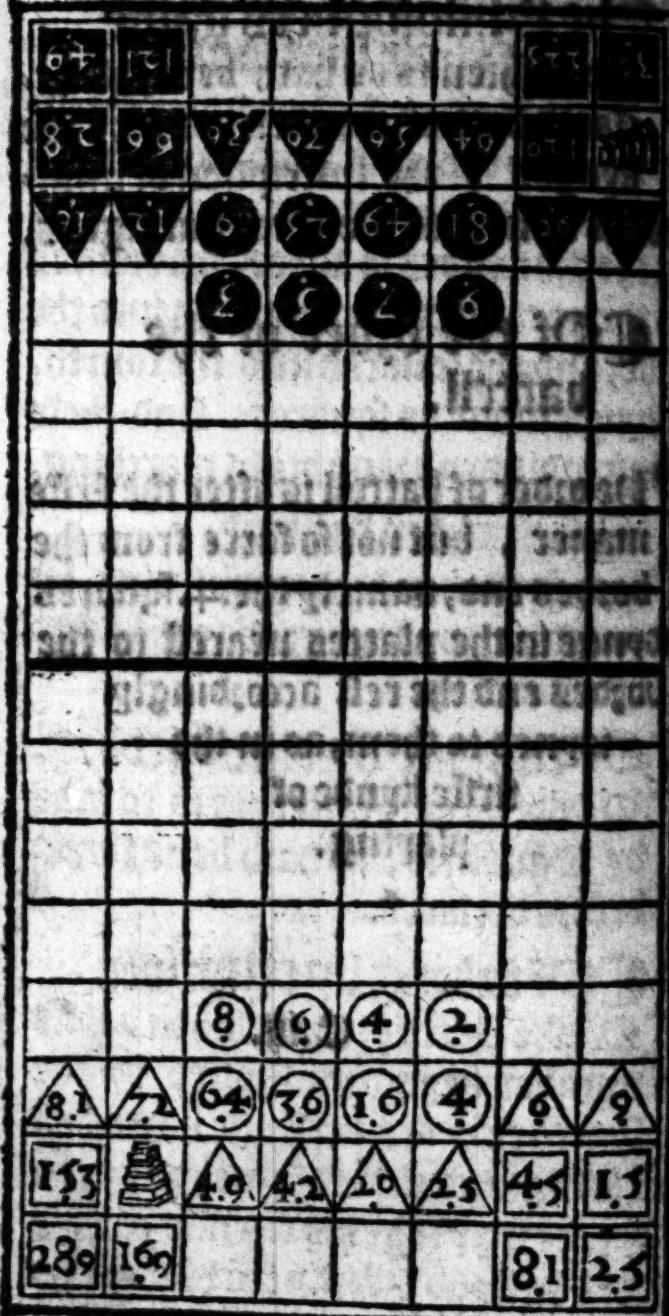
**T**he fashion is as bath bene laste declared both of the men , and of the bynges , the inscription of mimes betwix the game, but wout collical signes.

## C Of the order of the battell.

**T**he order of battell is after the sixte maner , but not so farre from the bordes end, namely the 4. squires handynge in the platters nearest to the bordes end the rest accordingly typoned to them, as in the sixte bynde of playing.



C. vii.



## The Philosophers game.

### C Of their motions.

**T**he men moue fro warde and backwarde, to the right hand, and to the left hande, but not cornerwise, except the gamesters so agree, the rounds into the next space, þ triangles into the thyrd, and the squares into the fourth, the kyngs moue as squares. And these be their ordinary draughts in marching.

### C Of their taking.

**T**hey are taken by encountering, by eruption, by laying wayght, and by oblidion.

### C Of takyng by encountering.

**T**o take by encountering is to take by Equalitie, as hath bene shwte before declared.

### C Of taking by eruption.

**T**o take by eruption is when a lesse number beyng multiplied by the spaces that are betwene him & hys aduersary, þ product is as much as his aduersary, he may take his enemite alwaye whether he stand directly fro him or cornerwise.

E. sig. Foz

The Philosophers game,  
For men that may be taken by exemption  
ooke in the table of takyng by multiplacation in the second kynd of playng.

### COf takyng by Deceipt or lyng weight.

**T**O take by deceipt or lyng weight,  
is to take by addition, not as before  
when the aduersary standeth with  
in the draught of two men which being  
added make the issue number of the ad-  
uersary, but when the 2. numbers that  
are to be added, stande in the next spaces  
to the aduersarie. For to take by deceipt,  
ooke in the table that was set forth in  
takyng by addition in the first kynde of  
playngc.

### COf taking by Obsidion.

**B**Y Obsidion all men may be taken,  
when fourre men besiege the aduen-  
sarie, standynge in the fourre nexte  
spaces.

## The 13th philosopher's game.

shakes about him directly, or cornerwise,  
the man so besieg'd can not escape, be-  
cause he can not remove cornerwysse,  
therefore maye be taken vp, so soone as  
the last of the soure is set in his place.

In all thysse lyndes of playing no Dis-  
sencion can be of any man with some of  
his fellowes, but all soure muste be byn  
aduersaries.

In this thynde lynde, these men can be  
none otherwyse taken but by Dissencion.  
namely amonge the even. 2. 4. 4. 5.  
among the odd. 3. 5. 7. 190.

In all maner of taking this is to be no-  
ted, that we muste not place the man  
whiche taketh in place of him that is ta-  
ken, but when he maye be taken before  
we drawe, then shall we remoue our  
man into his place.

## The privilege of the king.

**T**he king standeth for so many men  
as he bath steppes, that is the even  
for 6, the odd for 5. if amye of these  
C.b. (except

## The Philosophers game.

(except the lowest and greatest) be taken  
the king may redeeme hym, by any man  
of his that is of the same number. If he  
haue none of the same number, he maye  
redeeme him by any of his men that hys  
aduersary wyl chuse. But if his lowest  
Square be taken, no ransom will deluyer  
him. Also if the whole kyng at ons that  
is the whole number of Pyramis be ta-  
ken, he can not be redemed.

## ¶ Of the triumphe.

**T**O take awaie the tediousnes of  
long play from them that be yonge  
beginners, wryters of this game  
haue inuented divers kyndes of shorte  
victories, wherfore they bende victory  
into proper and common. Of the proper  
victorie need nothing here be spokyn, so  
all things thereto belonging are suffici-  
ently set forth in þ first kynd of playing.

## ¶ Of the common victory.

**T**HE common victorie (they say) is af-  
ter syue maners, for men contende  
either for bodies, goods, quarrelles,  
honour, or els for both quarells & honor.

Victo-

## The philosopher's game.

### ¶ Victory of bodies,

**V**ictory of bodies is only to take a certain number of men, as if the gamesters agree, that he which first taketh 4.02.5.02.6.02.10. men &c, shall win the game.

### ¶ Victory of goods.

**V**ictory of goods, is to take a certain number wout respect of the men.

As if it be covenanted, that he which first taketh men amounting to þ number of 100.00.200. shall have the victory.

### ¶ Victory of quartell.

**V**ictory of quartell is woken neither the men, nor the number, but the characters of the number be considered. As if it be determined that he which first taketh 100.in.8.characters not regarding in how many men they stande, shall winne. As 2.4.6.8.24.64. so you haue. 100.in.8.characters it skillereth not, although there be more then. 100. as in this exaple there is more then. 100. by. 4.

Victorie

## The philosopher's game;

### ¶Victorie of honour.

Victorie of honour, is when a determined number is made in a determined number of men, as if it be determined that he whiche falle cometh to.100,in.8.men, shall winne the game. As in these.2, 4, 6, 8, 4, 16, 45, 15. And though there were somewhat more then 100, so it be in.8.men, it skilleth not,

### ¶Of bictorie of honour and quarrell.

The bictorie of honour and quarrell, is when one obteyneth the decreed number, in the decreed number of men and the decreed number of characters : as let.100.be the decreed number 8.the determined number of men , and 9.the determined number of characters. He that obteyneth 2, 4, 6, 8, 4, 6, 9, 64, obtaineth the bictorie of honour and quarrell. It shalbe no hindrance though.8. men

## The Philosophers game.

men and 9. caracters conteynne somewhat  
more them 100. so that there be not 100.  
upon one man , as in the victorie before.

## ¶Victorie of standers.

**T**hey haue intented another victorie , that is of standerdes, by counte-  
cepting two armes , one of the  
Christians , another of the Turkes .  
The whyte men , that is the euene hoste ,  
conteyneth 172. souldiers (not compting  
the rootes of squares expressed in the  
kynges) let the first and last be captaines  
and let them devide the wholle arme  
into 10. standerdes so every standerd shall  
haue 17. men , besyde the two captaines  
and the ten standerd bearers . The black  
men ,<sup>2</sup> is the odd arme (except h kynges  
rootes) be 175. The two captaynes and  
ten standerd bearers taken out , there re  
mayneth 1740. souldyers , so every stan-  
derd 174. Hc that wynnethe more stan-  
ders hath the victorie . If the euene hoste  
wynne

# The Philosophers game.

Wynne. 348. men he hath obtaigned the  
Standards if he wynnne. 522 he hath gotten  
three standers and so forth of the rest.

If the odde armie wynnne. 260. they  
wynn two standers. 390. three standers  
and so of the rest.

## ¶ Table of the victorie of standers.

One stander of y eare,	130.
Sixt y eare.	conteyneth.
Two standers.	260.
Three standers.	390.
Fourre standers.	520.
Fyue standers.	650.
Sixre standers.	780.
Seuen standers.	910.
Eyght standers.	1040.
Nyne standers.	1170.
Tenne standers.	1300.

# The Philosophers game.

One standerd of the odde, conseyneth.	174.
Two standers.	348.
Three standers.	522.
Four standers.	696.
Fyue standers.	870.
Six standers.	1044.
Seven standers.	1218.
Eight standers.	1392.
Nyne standers.	1566.
Tenne standers.	1740.

Y DU maye vse amye of these syng  
kyndes of common bistorie, in euer  
ry one of the thre kyndes of playing.

FINIS.

Prynted at London by Rovland Hall,  
for Iames Rovvbothum, and are to  
be folde at his shoppe in  
chepeside vnder Bovve  
churche.

1563.



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